

WHAT IS CLAIMED IS:

1. A high-temperature secondary battery based energy storage and power compensation system, comprising:

5 an electric power supply system;

an electric load ;

an electric energy storage system including a high-temperature secondary battery and a power conversion system,

10 wherein the electric power supply system, the electric load and the electric energy storage system are electrically connected, and from which, when operating normally, electric power is supplied to the electric load while the electric energy storage system operates to effect peak shaving running and load leveling running; and

15 a high speed switch provided between the electric power supply system and the electric energy storage system;

when a voltage sag or a service interruption occurs in the electric power being supplied from the electric power supply system, the voltage sag is immediately detected,
20 circuit is temporarily shut off, electric power is immediately supplied from the electric energy storage system to the electric load in order to compensate for the voltage sag or the service interruption.

25 2. A high-temperature secondary battery based energy

storage and power compensation system according to claim 1, wherein the high-temperature secondary battery is a sodium sulfur battery.

5 3. A high-temperature secondary battery based energy storage and power compensation system according to claim 1, wherein the energy storage system for compensating for the voltage sag or the service interruption is a system capable of outputting a compensation electric power which is 3 to 8
10 times a rated electric power of the peak shaving running and the load leveling running.

 4. A high-temperature secondary battery based energy storage and power compensation system according to claim 1,
15 further comprising: a back-up generator which is connected to the circuit on the electric power compensation side of the high speed switch;

 a voltage compensation controller capable of detecting a circuit shut-off effected by the high speed switch,
20 sending a command in accordance with a detection signal to cause the energy storage system to discharge an entire electric load, and, at the same time, starting the back-up generator, so that if the electric power supply is not restored within a predetermined time period, the back-up
25 generator is connected in parallel with the system, while at

the same time the electric power supply from the energy storage system is stopped.

5 5. A high-temperature secondary battery based energy
storage and power compensation system comprising the
electric power supply system, the electric load, and the
electric energy storage system including the high-
temperature secondary battery and the power conversion
system; all of which being electrically connected with one
10 another so as to supply an electric power from the electric
power supply system to the electric load under normal
operation conditions, and operating the electric energy
storage system in order to effect peak shaving running and
load leveling running according to claim 1, wherein said
15 system further comprises a control function capable of
coping with a fluctuation derived from an event such as a
spike and a frequency fluctuation in the electric power
supplied, by detecting immediately such an event, and
sending a signal based on detection to the electric energy
20 storage system in order to compensate for the fluctuation.

6. A high-temperature secondary battery based energy
storage and power compensation system according to claim 1,
wherein spare high temperature batteries connected in
25 parallel with module high temperature batteries are provided

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